

**A Mobile Application for Automated Maize Disease Detection Using Convolutional Neural Networks**

BY

Mutunga Victor Nzyoka

C025-01-0940/2021

**SUPERVISOR**

Mr. Patrick Ndungu

**A project submitted to the Department of Information Technology in the School of Computer Science and Information Technology in partial fulfilment of the requirements for the award of the degree of BSc. Information Technology at Dedan Kimathi University of Technology**

**March 2024**

**ABSTRACT**

Maize, a vital food crop in Kenya, faces numerous fungal diseases causing up to 60% yield losses annually, severely impacting smallholder farmers in regions like Makueni County. Timely disease detection and treatment could reduce these losses by over 40%. This project develops a deep learning-based maize disease identification system to address this need.

The system features a convolutional neural network (CNN) model, trained on leaf images to accurately detect and classify three prevalent maize diseases - Blight, Common Rust, and Gray Leaf Spot. The model is integrated into an Android mobile application using Flask API, enabling farmers to upload leaf images for real-time, on-device disease diagnosis.

Alongside disease detection, the application provides recommended fungicides tailored to disease type and severity, sourced from agricultural experts. The system also connects farmers directly with extension officers for further disease management consultations personalized to local conditions.

The implementation of this disease identification tool has the potential to revolutionize disease management in local maize crops, mitigating yield losses and contributing to sustainable agricultural practices. Recommendations include refining the model's performance with additional data sources and exploring real-time implementation through mobile applications.